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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,034	02/23/2004	Rudy Jan Maria Pellens	081468-0308407	3791

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EXAMINER	
ABRAHAM, FETSUM	
ART UNIT	**PAPER NUMBER**
2826	

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/783,034	PELLENS, RUDY JAN MARIA	
	Examiner	Art Unit	
	Fetsum Abraham	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20-25* is/are allowed.

6)☒ Claim(s) *the rest* is/are rejected.

7)☒ Claim(s) *2 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The allowance of claims 1-19 in the previous action has been withdrawn.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Claims 1,5,11 are rejected under 35 U.S.C. 102(b) as being anticipated by Fredricks et al (4,567,132).

As for claim 1, the patent discloses a device manufacturing method procedurally as claimed and as hereby described:

1) Providing a substrate (20)

20 providing a first electromagnetic radiation sensitive material (26) on the substrate

c) Providing a second and different than the first electromagnetic radiation sensitive material (28) on the first

d) Providing a light beam (32) using an illumination system

e) Imparting the beam with a desired pattern by using a mask (30)

f) Projecting the patterned beam onto a target portion of the first and second sensitive layers

As for claim 5, the two sensitive layers are immiscible, or tended to mix to a homogeneous structure.

As for claim 11, the exposed portions of the sensitive layers are removed after upon developing (see column 1, 35-40).

Claims 6,8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fredricks et al (4,567,132) in view of Hien et al (6,063,543).

The prior art could have been silent on a generic or common solvent of the photosensitive layers, however, the secondary reference teaches that any one of cyclohexanone or ethyl loctate or propylene glyconl monomethyl ether acetate as being a photoresist solvent that provides both positive and negative resists their photoresist structures (see column 4, last paragraph). Therefore, it would have been obvious to one skilled in the art to expect the photoresists in the prior art to have one of the solvents in the secondary reference as their composition, since the prior art further teaches that the solvents guarantee high adhesion of resists to substrates (see the same column and paragraph).

As for claim 8, the materials given above are possibilities of solvents constituted within the technology that the two resists can independently have. Therefore, it would have been obvious to one skilled in the art to have the two photoresists in the prior art composed with different solvents in order to best utilize their solvents in the anticipated lithographic process.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fredricks et al (4,567,132) in view of Tan et al (6,638,683).

The prior art may have been silent on the claimed acetal polymer based photoresists. However, the secondary reference provides a teaching in column 2, 25-30

that photoresist can have compositions containing a polymer having groups substituted with acetal groups (see column 2, 25-30). Although better photoresists are known in the art with higher optical properties, the photoresists in the prior art could have been made from materials based on acetal polymers t the expense of some problems in dimensional reproducibility (see column 2, 35-40) at a probable advantage of cost.

As for claim 10, Tan teaches in the abstract that that the two resists used in the patent are positive photoresists and therefore, positively radiation sensitive (also see column 2, 41-46). In view of that teaching, it would have been obvious to one skilled in the art to have positive photoresists with slight modification in the prior art in order to secure better compatibility of the sensitive layers.

Claims 3,4,12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fredricks et al (4,567,132) in view of Maile (6,881,688).

As for claims 3,12,13, the primary reference might have been silent about the thickness difference of the resists and overhanging structure of said second resist. The secondary reference, however, shows both limitations in figure 3. In the figure, a second photoresist (32) is formed on the first photoresist layer (22) and the removed portion of the first resist layer is thinner than that of the second and the second overhangs the first layer. Therefore, it would have been obvious to one skilled in the art to have such exposure technique in thick and thin resist layers, since the process produces a T-gate structure in T-gated transistor devices.

As for claim 4, layer thickness is a known variable in the art. In this particular case, anticipated T-gate dimensions dictate the terms on how thin or thick the resists

have to be. Therefore, the resist thickness is a function of the anticipated gate size. Since T-gates do not come on standard size, it would have been obvious to one skilled in the art to calculate the resist thickness in order to match the anticipated gate size in a particular application or structure.

As for claim 14, metal is introduced in the opening formed by exposure on the substrate in the secondary reference. Therefore, it would have been obvious to one skilled in the art to metalize the opening of the primary reference in the condition a contact or an electrode is the goal of the process since the secondary reference metalizes top surface of the underlying substrate through the opening to construct a gate structure on the substrate.

As for claim 15, the second reference used the lift off method after development to produce the intended T-gate structure.

As fort claim 16, most gate electrodes require two layers of metallization: the first for the gate electrode and the second for wiring or power application purpose. Therefore, it would have been obvious to one skilled in the art to form a multilayered gate structure by second metallization process by using the resists for the process ahead of lift off. Please note that metallization process could be performed once or twice or even multiple more times within the same framework of process. Such processes do not require rearranging the structures for the process since the metallization process is more or less similar from one to the other with probable changes in other processing areas in case of using different metallic materials.

Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fredricks et al (4,567,132) in view of Maile (6,881,688) and further in view of Singh et al (6,7,40,535).

As for claim 17, the prior arts and specifically Maile might have been silent on the type of metal used for gate electrode formed in the opening. However, Singh disclose a tri-layered gate structure composed of Ti/Pt/Au materials (see description of figure 1). Therefore, it would have been obvious to one skilled in the art to use the layered gate structure in T-gated devices to maximize gate conductance of the transistors.

Claims 2,9, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As for claim 9, the specific photosensitive materials selected for the claimed lithographic process is neither taught nor rendered obvious by the prior arts.

Claims 20-25 have been allowed.

Although doze sizes of sensitive layers could change depending on anticipated results, the claimed relative dose sizes and their dictating effect or motivation on the making of said T-gate structure as a potential result of the specific dose sizes (see page 3, second paragraph of the specification) is not taught or rendered obvious by the prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fetsum Abraham whose telephone number is: 571-272-1911. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915.

Fetsum Abraham
5/5/05